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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,191	11/18/2003	Martin C. Bleck	291958191US3	4136

25096 7590 08/17/2006

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EXAMINER

ZHENG, LOIS L

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 08/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/716,191

Applicant(s)

BLECK ET AL.

Examiner

Lois Zheng

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 31-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>18 November 2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of invention group I, claims 31-48 in the reply filed on 12 June 2006 is acknowledged.
2. Claims 49-53 are canceled in view of the remarks filed 12 June 2006.

Priority

3. The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed application, Application No. 08/680,057 now US Patent No. 5,980,706, fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. US Patent No. 5,980,706 does not provide support for the instantly claimed flow control structure. Therefore, the instant applicant does not benefit from the priority date of the US Patent No. 5,980,706. The priority date for the instant application is 30 September 1997.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 31-35 and 37-48 are rejected under 35 U.S.C. 102(e) as being anticipated by Arken et al. US 6,001,235(Arken).

Arken teaches an rotary electroplating apparatus comprising the claimed plating vessel having the claimed inner and outer portions(Fig. 2 #100, 22, 28), the claimed wall between the inner and outer portions(Fig. 2 #28), the claimed electrode supported by an electrode support(Fig. 2 #40, 104, col. 5 lines 13-15), the claimed flow control structure (Fig. 2-4 #102 & 202) above the electrode support and below the microelectronic workpiece processing surface and the claimed head assembly(Fig. 2 #56, 58, 42, 500, 502) having a workpiece holder including a plurality of electrical contacts arranged to contact a peripheral portion of the workpiece(Fig. 9 # 72A-H). Arken's flow control structure includes a liquid pervious portion and a liquid impervious portion disposed annularly outwardly from the liquid pervious portion as claimed(Fig. 5, col. 6 line 3-15). The apparatus of Arken has an inlet providing electrolyte to the inner portion of the vessel(Fig. 2 # 38) and the wall between the inner and outer portions of Arken's electroplating apparatus functions as an overflow weir as claimed(Fig. 2 #4, col. 3 lines 56-61). The electrical contacts as taught by Arken read on the claimed electrical fingers and the flow control structure as taught by Arken read on the claimed diffuser plate. The workpiece holder as taught by Arken includes a rotor configured to rotate the

workpiece as claimed(Fig. 2, col. 5 lines 56-59). Arken further teaches the claimed source of processing solution(Fig. 2 #52) in fluid communication with the inner portion of the vessel as claimed.

Therefore, Arken anticipates instant claims 31-35 and 37-48.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arken in view of Bacon et al. US 4,466,864(Bacon)

The teachings of Arken are discussed in paragraph 5 above. However, Arken does not explicitly teach the claimed anode shield.

Bacon also teaches an electroplating apparatus(title, abstract). Bacon further teaches that the anode is supported on a diffuser plate(Fig. 3 #43).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the anode supporting diffuser plate as taught by Bacon into the apparatus of Arken in order to provide proper support to the anode as taught by Bacon.

The diffuser plate as taught by Arken in view of Bacon reads on the claimed anode shield.

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8. Claims 35-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bacon in view of Glenn US 3,963,588(Glenn), and further in view of Lowery US 5,472,592(Lowery).

Bacon teaches and electroplating apparatus comprising the claimed plating vessel having the claimed inner and outer portions(Fig. 3 #31 & 46), the claimed wall between the inner and outer portions(Fig. 3 #46), the claimed electrode supported by an electrode support(Fig. 3 #61-62, 43, col. 4 lines 33-37), and the claimed head assembly having a workpiece holder (Fig. 3 #38). The apparatus of Bacon has an inlet providing electrolyte to the inner portion of the vessel(Fig. 3) and the wall between the inner and outer portions of Bacon's electroplating apparatus functions as an overflow weir as claimed(Fig. 3 #54, col. 4 lines 24-32).

However, Bacon does not explicitly teach the claimed flow control structure between the electrode and the workpiece processing surface. Bacon also does not explicitly teach the claimed head assembly including a plurality of electrical contacts arranged to contact a peripheral of the workpiece.

Glenn teaches an electroplating cell comprising a diffuser plate(Fig. 1 #3) positioned between the anode and the wafer processing surface(Fig. 1 #9 & 5).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the diffuser plate as taught by Glenn into the apparatus of Bacon between the anode and the workpiece processing surface in order to achieve more uniform deposition as taught by Glenn(col. 4 lines 1-6). In addition, since the plate as taught by Glenn comprises a plurality of holes in the interior portion of the plate, it reads on the

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flow control structure having a liquid pervious portion and a liquid impervious portion disposed annularly outwardly from the liquid pervious portion as claimed.

Lowery teaches an electroplating apparatus comprising a plurality of electrical contacts on the head assembly that holds the workpiece substrate(Fig. 3 # 46).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the plurality of electrical contacts as taught by Lowery into the head assembly of Bacon in view of Glenn in order to evenly distribute current to the substrate as taught by Lowery(col. 8 lines 39-49).

Regarding claims 31-38, the plurality of electrical contacts as taught by Bacon in view of Glenn and Lowery read on the claimed electrical fingers projecting from the workpiece support and the electrode support plate as taught by Bacon in view of Glenn and Lowery reads on the claimed anode shield. Therefore, the instantly claimed electroplating apparatus as recited in claims 35-38 does not structurally distinguish from the apparatus of Bacon in view of Glenn and Lowery.

Regarding claims 39-46, Lowery further teaches that the workpiece is rotated by a driving shafted which is controlled by a motor to enhance the uniformity coating thickness across the surface of the workpiece(col. 3 lines 34-50). Therefore, it would have been obvious to have incorporated the workpiece rotation mechanism as taught by Lowery into the electroplating apparatus of Bacon in view of Glenn and Lowery in order to enhance the uniformity of coating thickness across the surface of the workpiece as taught by Lowery. The remaining claim limitations are rejected for the same reasons as stated the rejection of claims 31-38 above.

Regarding claims 47-48, even though Bacon in view of Glenn and Lowery do not explicitly teach the claimed source of processing solution in fluid communication with the inner portion of the processing vessel, one of ordinary skill in the art would have found the claimed source of processing solution obvious in order to replenishing the electrolyte in the electroplating apparatus. The remaining claim limitations are rejected for the same reasons as stated the rejection of claims 31-38 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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